CLAIMS

1. An optical disk device comprising:

optical means for extracting information stored on a disk;

control means for controlling said optical means;

signal process means for optimally converting a regenerated signal extracted by said optical means into a binary signal; and

reference clock generation means for generating a reference clock substantially equal to a basic transfer speed of the regenerated signal from a fixed clock;

said reference clock generation means comprising:

a first divider for dividing the fixed clock;

a second divider for dividing the reference clock;

a phase comparator for detecting a phase error between a division clock output by said first divider and a division clock output by said second divider;

a voltage/current control oscillator for oscillation at a frequency depending on the phase error output by said phase comparator; and

setting means for setting a central oscillation frequency or a gain of said voltage/current control oscillator;

whereby characteristics of said signal process means are optimally varied according to an oscillation frequency of said voltage/current control oscillator.

2. The optical disk device according to claim 1 wherein said signal process means comprises an automatic gain control circuit for controlling an amplitude of a regenerated signal to be constant, so that response characteristics of said automatic gain control circuit are controlled according to the oscillation frequency of said voltage/current control oscillator.

3. The optical disk device according to claim 1 wherein said signal process means comprises a waveform equalization circuit for removing a regenerated signal out-of-band element and equalizing a waveform, so that a signal removal band and waveform equalization characteristics of said waveform equalization circuit are varied according to the oscillation frequency of said voltage/current control oscillator.

4. The optical disk device according to claim 1 wherein said signal process means comprises a binarization circuit for converting a regenerated signal into binary data, so that response characteristics of said binarization circuit are varied according to the oscillation frequency of said binary data circuit.

5. The optical disk device according to claim 1 wherein said signal process means comprises a mono-multi vibrator for generating a one-shot pulse having a predetermined width from an edge of a binary signal output by a binarization circuit,

so that the pulse width of the one-shot pulse is controlled according to the oscillation frequency of said voltage/current control oscillator.

6. An optical disk device comprising:

optical means for extracting information stored on a disk;

control means for controlling said optical means;

signal process means for optimally converting a regenerated signal extracted by said optical means into a binary signal;

reference clock generation means for generating a reference clock substantially equal to a basic transfer speed of the regenerated signal from a fixed clock; and

data clock extraction means for extracting a clock element from binary data of the regenerated signal;

said reference clock generation means comprising:

a first divider for dividing the fixed clock;

a second divider for dividing the reference clock;

a first phase comparator for detecting a phase error between a division clock output by said first divider and a division clock output by said second divider;

a first voltage/current control oscillator oscillating at a frequency depending on the phase error output by said first phase comparator; and

central frequency setting means for setting a central oscillation frequency of said first voltage/current control oscillator;

said data clock extraction means comprising:

a second phase comparator for detecting a phase error between the regenerated binary data and a data clock; and

a second voltage/current control oscillator oscillating at a frequency depending on the phase error output by said second phase comparator;

whereby characteristics of said first voltage/current control oscillator are set equal or similar to the characteristics of said second voltage/current control oscillator, and the oscillation frequency of said first voltage/current control oscillator is referred to by said second voltage/current control oscillator.

7. An optical disk device comprising:

optical means for extracting information stored on a disk;

control means for controlling said optical means;

signal process means for optimally converting a regenerated signal extracted by said optical means into a binary signal;

reference clock generation means for generating a reference clock substantially equal to a basic transfer speed of the regenerated signal from a fixed clock; and

data clock extraction means for extracting a clock element from binary data of the regenerated signal;

said reference clock generation means comprising:

a first divider for dividing the fixed clock;

a second divider for dividing the reference clock;

a phase comparator for detecting a phase error between a division clock output by said first divider and a division clock output by said second divider;

a first voltage/current control oscillator oscillation at a frequency depending on the phase error output by said phase comparator; and

setting means for setting a central oscillation frequency or a gain of said first voltage/current control oscillator;

said data clock extraction means comprising:

a second voltage/current control oscillator having at least characteristics equal to characteristics of said first voltage/current control oscillator; and

synchronization detection means for detecting a synchronization state of said data clock extraction means;

whereby characteristics of said signal process means can be optimally varied based on a detection state of said synchronization detection means.

8. The optical disk device according to claim 7 wherein

said signal process means comprises an automatic gain control circuit for controlling an amplitude of the regenerated signal to be constant, so that response characteristics of said automatic gain control circuit are controlled according to an oscillation frequency of said first voltage/current control oscillator.

9. The optical disk device according to claim 7 wherein said signal process means comprises a waveform equalization circuit for removing the regenerated signal out-of-band element and equalizing a waveform, so that a signal removal band and waveform equalization characteristics of said waveform equalization circuit are varied according to an oscillation frequency of the first voltage/current control oscillator in said reference clock generation means or of the second voltage/current control oscillator in said data clock extraction means.

10. The optical disk device according to claim 7 wherein said signal process means comprises a binarization circuit for converting a regenerated signal into binary data, so that response characteristics of said binarization circuit is varied according to an oscillation frequency of the first voltage/current control oscillator in said reference clock generation means or of the second voltage/current control oscillator in said data clock extraction means.

11. The optical disk device according to claim 7 wherein said signal process means comprises a mono-multi vibrator for generating a one-shot pulse having a predetermined width from an edge of a binary signal output by the binarization circuit, so that a pulse width of said one-shot pulse is controlled according to an oscillation frequency of the first voltage/current control oscillator in said reference clock generation means or of the second voltage/current control oscillator in said data clock extraction means.

12. An optical disk device comprising:

reference clock generation means for generating a reference clock substantially equal to a basic transfer speed of the regenerated signal from a predetermined fixed clock;

said reference clock generation means comprising:

a first divider for dividing the fixed clock;

a second divider for dividing the reference clock;

a phase comparator for detecting a phase error between a division clock output by said first divider and a division clock output by said second divider;

a charge pump for converting the phase error detected by said phase comparator into a voltage or an amount of electric current; and

a voltage/current control oscillator for oscillation at a frequency depending on the phase error output by said phase comparator;

whereby a gain of said reference clock generation means is varied based on an amount of division of said first divider.

13. The optical disk device according to claim 12 wherein the gain of said reference clock generation means is varied based on an amount of voltage or electric current of said charge pump.